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Encore

Method and Theory in Memory; Or, How Many Rooms Are There in the Mad Hatter's House?

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It might come as a surprise to some, but behavior analysis has made significant contributions to the study of memory, or "remembering," as some in this domain prefer. Skinner first developed the automated matching-to-sample procedure that, with all the subsequent variations of delay, stimulus arrangements, schedule requirements, and so forth, has spawned a major set of methods for the analysis of memory in human and nonhuman organisms, including the neurophysiology of memory function. Very sophisticated techniques and theoretical approaches have come from those primarily trained, or at least originally thought of, as behavior analysts, for example, Honig, D'Amato, Rilling, Wixted, and Wright. In general, within behavior analysis the problem of memory has resided in the field of stimulus control.

Yet, for many of those who call themselves behavior analysts, the topic of memory remains experimentally and, certainly, theoretically remote. There are a number of reasons for this isolation. Proximally, memory is seen as a province of cognitive psychology, and, as such, is viewed by behavior analysts with scientific suspicion, what with all those baroque hypothetical constructs and theories, and a seeming disinterest in behavior and its controlling variables. The cognitive psychologist appears to view behavior as a symptom of mysterious mental workings, which are the real subject matter of interest. The key issue for behavior analysts, however, resides not in theory itself, or, more particularly, in observable versus unobservable events, or in subjective versus objective experience. All good radical behaviorists do not consider these distinctions to be especially significant. At worst, they are expressions of dualism. The key issue is *metaphorical mediation*—that is, the construction of a metaphorical world to explain the properties of functions in a functional account—to mediate behavior–environment interactions. What mediates environment–behavior interactions is physiology, notably the nervous system. The study of how the nervous system is changed in behavioral processes, as Skinner asserted years ago, will provide a more complete account of why something that happens to us today may affect us tomorrow and perhaps for the rest of our lives. Neurophysiologists study real brains, not metaphorical ones. Their success will depend not only upon a careful and sophisticated probing of the nervous system at all levels but also upon an extensive functional analysis of how behavior is influenced by particular histories. A functional analysis gives meaning to the nervous system, and vice versa. However, neither effort need wait for the other; each has its own agenda. Neurophysiology has a lot of groundwork to do. Meanwhile, behavior analysis can continue to develop and systematize a functional account untroubled, as always, by action at a temporal distance.

Action at a temporal distance vexes many cognitive psychologists. Not be-

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ing neurophysiologists and not having any particular interest in behavior itself, they have to invent a conceptual nervous system of their own to explore and to populate with metaphors chosen from the latest technology. *Encoding, buffer, storage, representation, trace, retrieval,* and so forth are neither behavioral nor physiological terms or concepts. They are metaphors to be woven into elaborate just-so stories to account for how history and context control present behavior.

One is delighted to find that we have a friend in the cognitive business. Michael Watkins, a cognitive psychologist and eminent memory researcher, is also deeply troubled by mediational theories of memory. In the following article, reprinted from the *American Psychologist,* Watkins (1990) vividly argues against mediationism of the cognitive kind, and, in doing so, finds himself in close agreement with long-held views in behavior analysis (e.g., Branch, 1977; Marr, 1983). The agreement is not complete, however, by any means. Watkins distances himself from "rank Skinnerism" by asserting what appears to be a "rank dualism." Thus, "we consider memory to be, of its very essence, a mental phenomenon" (p. 333, in the original). Alongside the benefits of his antimediational views to the *conduct* of the science, this dualistic stance might be viewed as a mere peccadillo.

I thought it important to have a perspective on Watkins' views from mainstream cognitive psychology. For that I asked Tim Salthouse to comment on Watkins' article. Although Salthouse may not be well known within the behavior-analytic community, he is a world-class authority on memory function, particularly in the aged. He is extraordinarily astute at blending theory, methodology, and bold experimentation to explore human memory and performance (see, e.g., Salthouse, 1991, 1992). Following Salthouse's comments, Watkins responds.

The Behavior Analyst expresses its deep appreciation to Michael Watkins and Tim Salthouse for their thoughtful and provocative contributions. We also thank the American Psychological Association for permission to reprint the Watkins article. As always, readers are invited to respond to the debate.

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